

Nalco Docket No. 7773
Customer No. 49459

REMARKS

Claims 1 to 13, 15 to 18, and 20 to 23 are currently pending.

RESPONSE TO ARGUMENTS

In the instant Office Action, the Examiner states that Applicants' amendments filed August 8, 2007 (in response to the Office Action dated May 10, 2007) have failed to overcome the outstanding rejections. Specifically, the Office Action dated May 10, 2007, rejected Claims 1 to 10, 13 to 18, and 20 to 23 under 35 U.S.C. § 103(a) as being unpatentable over U.S. Patent No. 3,556,932 to Coscia et al. ("Coscia") as evidenced by U.S. Patent No. 6,083,348 to Auhorn et al. ("Auhorn") or U.S. Patent No. 6,315,866 B1 to Sanchez ("Sanchez").

In support, the Office Action sets forth that although Coscia teaches the ratio of aldehyde-functionalized to non-functionalized units in the polymer should be in the range of 0.10:1 to 0.20:1, Coscia places no emphasis on the preferred upper limit of 0.20:1. The Examiner further argues, "ratios of greater than 0.2 are permitted although the gain in wet strength is minor." (Office Action at page 2).

Applicants respectfully assert Coscia neither teaches nor suggests that ratios greater than 0.20:1 may be used. Coscia unequivocally states a possible glyoxylation ratio range of 0.10:1 to 0.20:1 and provides several examples within that range. Example 1 provides a ratio of 0.12:1; Example 2 provides a ratio of 0.17:1; and Example 11 provides that the most efficient polymer has a ratio of about 0.12:1.

Coscia does not use any generalizing or broadening language in disclosing the ratio of 0.10:1 to 0.20:1 (col. 6, lines 66 to 67). In none of its examples or embodiments does Coscia provide a polymer with greater than 0.17:1 of glyoxal-functionalized amido groups.

Moreover, even though Coscia discloses non-functionalized polymers in a molecular weight range of 100,000 to 1,000,000, Coscia states, "it is preferred to employ polymers having molecular weights less than 25,000 as starting materials." (col. 3, lines 64 to 66 and 73 to 75; Example 1). Coscia further states that polymers of lower molecular weight (interpreted as less than 25,000) are "more easily handled" and "possess greater storage stability" after being reacted

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with glyoxal. (col. 3, lines 66 to 73). The broad molecular weight range of 100,000 to 1,000,000 Coscia discloses refers to the water solubility range for a class of non-functionalized polymers and not to the molecular weight range for glyoxal-functionalized polymers.

Thus, Coscia teaches away from glyoxal-functionalized polymers having a molecular weight greater than 25,000. Even if a molecular weight of 25,000 is broadly construed, it is nowhere near the 300,000 g/mol weight average molecular weight as in Claim 1 of the present invention. Coscia in no way teaches or suggests the combination in Claim 1 of one or more aldehyde functionalized polymers comprising amino or amido groups wherein greater than 20 mole percent of the amino or amido groups are functionalized by reacting with one or more aldehydes and wherein the aldehyde functionalized polymers have a weight average molecular weight of at least about 300,000 g/mole.

For at least the reasons above, Applicants respectfully request that the Examiner reconsider Applicants' amendments filed on August 8, 2007.

CLAIM REJECTIONS

The Office Action rejected Claims 1 to 4, 6, 9, 13, 15 to 18, and 20 to 23 under 35 U.S.C. § 102(b) as anticipated by or, in the alternative, under 35 U.S.C. § 103(a) as obvious over, U.S. Patent No. 4,603,176 to Bjorkquist et al. ("Bjorkquist") as evidenced by Auhorn or Sanchez.

Applicants respectfully disagree with and traverse this rejection.

Bjorkquist discloses resins for imparting temporary wet strength. In particular, Bjorkquist discloses "water-soluble ionic polymers having a molecular weight from about 5,000 to about 200,000, preferably from about 5,000 to about 112,000." (col. 3, lines 39 to 43).

Among other elements, Claim 1 (and Claims 2 to 4, 6, 9, 13, 15 to 18, and 20 to 23 by dependency) of the instant invention is limited to aldehyde-functionalized polymers having a weight average molecular weight of at least about 300,000 g/mole. Specifically, the polymers of Claim 1 include one or more aldehyde functionalized polymers comprising amino or amido groups wherein greater than 20 mole percent of the amino or amido groups are functionalized by reacting with one or more aldehydes and wherein the aldehyde functionalized polymers have a weight average molecular weight of at least about 300,000 g/mole.

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Bjorkquist neither inherently or expressly discloses nor teaches or suggests such polymers. Even if the term "about" preceding the 200,000 upper molecular weight limit in Bjorkquist is broadly construed, the disclosed molecular weight does not approach the weight average molecular weight of at least about 300,000 g/mole as in Claim 1 of the pending Application. In addition, the Bjorkquist preferred molecular weight range of about 5,000 to about 112,000 is significantly lower than the upper limit of 200,000 of the broader disclosed range.

Moreover, Bjorkquist expressly teaches away from polymers having a molecular weight greater than 200,000. Bjorkquist unequivocally states, "It has been found that resins with high molecular weights (i.e., those in excess of 200,000) decay unacceptably slowly." (col. 9, lines 40 to 42, emphasis added). Thus, Bjorkquist in no way discloses, teaches, or suggests the combination in Claim 1 of one or more aldehyde functionalized polymers comprising amino or amido groups wherein greater than 20 mole percent of the amino or amido groups are functionalized by reacting with one or more aldehydes and wherein the aldehyde functionalized polymers have a weight average molecular weight of at least about 300,000 g/mole.

Applicants respectfully submit that for at least the reasons above Claim 1 (and Claims 2 to 4, 6, 9, 13, 15 to 18, and 20 to 23 that depend therefrom) are patentably distinct, not anticipated by, and nonobvious over Bjorkquist as evidenced by Auhorn or Sanchez. Therefore, Applicants respectfully request that these rejections be withdrawn.

The Office Action also rejected Claim 1 to 10, 13, 15 to 18, and 20 to 23 under 35 U.S.C. § 103(a) as being unpatentable over U.S. Patent No. 3,556,932 to Coscia et al. ("Coscia") as evidenced by Auhorn or Sanchez.

Applicants respectfully disagree with and traverse this rejection.

The Office Action sets forth that although Coscia teaches the ratio of aldehyde-functionalized units to non-functionalized units in the polymer should be in the range of 0.10:1 to 0.20:1, Coscia places no emphasis on the preferred upper limit of 0.20:1. The Examiner argues, "Coscia discloses any ratio above 0.06:1 and that the disclosed upper limit of 0.20:1 is a preferred limit rather than an absolute limit." (Office Action at page 6). The Examiner further states, "The molecular weight can be from 100,000 to 1,000,000." (Office Action at page 6).

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Applicants respectfully assert that Coscia neither teaches nor suggests that ratios greater than 0.20:1 may be used. Coscia unequivocally states a permitted range of 0.10:1 to 0.20:1 and provides several examples within that range. Example 1 provides a ratio of 0.12:1; Example 2 provides a ratio of 0.17:1; and Example 11 provides that the most efficient polymer has a ratio of about 0.12:1.

Coscia does not use any generalizing or broadening language when it discloses the ratio of 0.10:1 to 0.20:1 (col. 6, lines 66 to 67). In none of its examples or embodiments does Coscia provide a polymer with a ratio greater than 0.17:1 of glyoxal-functionalized amido groups.

Moreover, even though Coscia discloses non-functionalized polymers in a molecular weight range of 100,000 to 1,000,000, Coscia states, "it is preferred to employ polymers having molecular weights less than 25,000 as starting materials." (col. 3, lines 64 to 66 and 73 to 75; Example 1). Coscia further states that polymers of lower molecular weight (interpreted as less than 25,000) are "more easily handled" and "possess greater storage stability" after being reacted with glyoxal. (col. 3, lines 66 to 73). The broad molecular weight range of 100,000 to 1,000,000 Coscia discloses refers to the water solubility range for non-functionalized polymers and not to the molecular weight range for glyoxal-functionalized polymers.

Thus, Coscia teaches away from functionalizing polymers having a molecular weight greater than 25,000. Even if the preferred molecular weight of 25,000 is broadly construed, it is nowhere near the 300,000 g/mol weight average molecular weight as in Claim 1 of the present invention. Coscia in no way teaches or suggests the combination in Claim 1 of one or more aldehyde functionalized polymers comprising amino or amido groups wherein greater than 20 mole percent of the amino or amido groups are functionalized by reacting with one or more aldehydes and wherein the aldehyde functionalized polymers have a weight average molecular weight of at least about 300,000 g/mole.

Therefore, Applicants respectfully submit that Claim 1 (and Claims 2 to 10, 13, 15 to 18, and 20 to 23 by dependency) are patentably distinct and nonobvious over Coscia as evidenced by Auhorn or Sanchez, and respectfully request that this rejection be withdrawn.

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The Office Action further rejected Claims 1 to 10, 13, 15 to 18, and 20 to 23 under 35 U.S.C. § 103(a) as being unpatentable over Coscia in view of Bjorkquist as evidenced by Auhorn or Sanchez.

Applicants respectfully disagree with and traverse this rejection.

For at least the reasons set forth above regarding the disclosures of Coscia and Bjorkquist, Applicants respectfully assert that Claims 1 to 10, 13, 15 to 18, and 20 to 23 are patentably distinct and nonobvious over these references.

Therefore, Applicants respectfully request that this rejection be withdrawn.

The Office Action issued a rejection of Claims 11 and 12 under 35 U.S.C. § 103(a) as being unpatentable over Coscia in view of U.S. Patent No. 5,654,198 to Carrier et al. ("Carrier") as evidenced by Auhorn or Sanchez.

Applicants respectfully disagree with and traverse this rejection.

Claims 11 and 12 both depend from Claim 1. Applicants respectfully submit that dependent Claims 11 and 12 are patentably distinct and nonobvious for at least the reasons described above for Claim 1 and because of additional recited elements. Therefore, Applicants respectfully request that this rejection be withdrawn.

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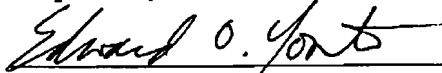
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CONCLUSION

In view of the foregoing remarks, Applicants respectfully request withdrawal of the rejections under 35 U.S.C. §§ 102(b) and 103(a). Applicants respectfully assert that all pending claims in this Application are in condition for allowance and earnestly solicit early notice to this effect.

Respectfully Submitted,



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Date: October 22, 2007